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NASA SKYLAB/EREP
THIRD QUARTERLY PROGRESS REPORT
Contract NAS8-29617 EPN 507

Application of Multispectral Photography to Mineral and Land Resources of South Carolina

Submitted by Norman K. Olson, PI

On November 13, 1973, and again on November 21, our nine-member South Carolina EREP team received 9 x 9-inch transparencies of S-190A photography (Table 1). All of these photographs were taken over the Georgia coast as the descending pass of Skylab (Ground Track 19) drifted slightly westward on very cloudy days during June 1973.

During December 1973, bulk color IR transparencies (2 1/4 x 2 1/4-inch) of the entire South Carolina coastal area were supplied to our EREP team by NASA-MSFC. A sunny day on September 16, 1973, with relatively few clouds provided good atmospheric conditions for the U-2 aircraft flying at 65,000 feet. These photographs are useful to us now and will become increasingly so in the future, particularly for studies of coastal morphology, identification of tidelands, stream channel variations, and urban and rural land use changes.

The deadline for the third quarterly progress report was December 20, 1973. Useful photography from SL3 arrived after that date and that information is reserved for fourth quarterly report. As stated in the second quarterly report, our South Carolina EREP team realizes that the dense cloud conditions which prevailed at the time of the SL2 passes were beyond human control. Furthermore, we also understand the limited capability of deliverying SL2 data products because of the reduced onboard power supply.

SL2 Photographs over Georgia

All areas photographed were almost entirely of the Georgia coastline because of a slight westward drift of Skylab as it descended over the Savannah River valley. The very small area that included South Carolina was always beneath dense clouds. Cloud cover over all areas photographed was consistently averaging 80 to 90 percent on the dates during June 1973, the period of the photography.

Two frames--217 from roll 81 and 165 from roll 10--were selected for cursory annotation. The scale of the 9 x 9-inch transparency for frame 217 (color) is almost exactly 1:500,000, thus affording a ready comparison with the USGS standard base map of the State of Georgia (1970) of the same scale (fig. 1). The scale of the transparency for frame 165 (color IR) is very nearly 1:700,000. Figure 1 indicates the approximate boundary of opaque cloud cover in frame 217; cloud cover in frame 165 was very similar. All inland areas were cloud-covered to a lesser degree.

Recognizable features on the two selected frames are the same as those mentioned in the second quarterly report.

Data products received during the third quarter will be retained by our EREP team in compliance with our NASA contract. Following that, however, our plan is to make the materials available to Georgia aerial remote sensing users.

U-2 Photographs over South Carolina

The entire South Carolina coastline was photographed in color IR by a U-2 aircraft flying at an altitude of 65,000 feet on September 16, 1973. Bulk transparencies were sent to the South Carolina EREP team by NASA-MSFC.

The U-2 transparencies allowed our EREP investigators an extra opportunity to examine detailed scenes of excellent photographic quality, nearly cloud-free, of any locality along the South Carolina coast (fig. 2). The scale of the 2 1/4 x 2 1/4-inch photographs is very nearly 1:500,000. Nearly all frames reveal a maximum of approximately 15 mi (24 km) inland. That distance, although insufficient for meaningful larger area urban studies, is adequate for producing maps showing changes in streamflow and the shoreline and also the relative distribution of tidal marsh and associated vegetation.

A first set of enlargements, received from the color processor in Atlanta, was printed in reverse. At the time of this writing the replacement set of enlargements had not arrived. A map indicating changes in the direction of stream channel flow and the shape of the coastline will be prepared. Also, a map showing tidal marsh and related vegetation will be prepared.

An analysis of the U-2 photography will be submitted with the maps. Unique features such as beach ridges, modern urban effects and others will be included.

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Table 1. SL2 transparencies (S-190A) received by South Carolina EREP team--EPN 507

Date Received	Date	Transparency Roll	Frames	Type
17 Nov 73	Jun 73	81	211 - 219	Color
21 Nov 73	Jun 73	8	153 - 158	B/W IR
21 Nov 73	Jun 73	12	153 - 158	B/W
21 Nov 73	Jun 73	10	161 - 166	Color IR

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